Amendments in the claims:

1. (currently amended) A compliant apparatus comprising:

a tubular structure made of elastic or superelastic material, said tubular structure defining an axis ~~formed from a tube made of a material having a reversible structural behavior~~, and

at least one compliant mechanism integrally formed from a portion of said tubular structure by symmetrically removing material from the tubular structure with respect to the axis, thereby forming symmetrical bending segments that are symmetrical in cross section with respect to the axis, without forming mechanical joints;

wherein each symmetrical bending segment of the compliant mechanism is capable of being controlled to bend away from the axis in a first direction and in an opposite, second direction, with substantially the same degree of strain, and ~~also formed from the tube as part of the tubular structure; wherein~~

~~the compliant apparatus has no mechanical joints; and~~

~~wherein the compliant apparatus is capable of being controlled to maneuver reversibly in various motions and degree-of-freedoms~~ without permanent deformation.

2. (original) The compliant apparatus of claim 1, wherein the cross-section of the tube is characterized as circular, oval, rectangular, square, straight, curvy, angular, or irregular.

3. (canceled)

4. (original) The compliant apparatus of claim 1, wherein the material is selected from the group consisting of an elastic alloy including stainless steel and titanium alloy, and a superelastic alloy including nitinol, Cu-Al-Ni, Cu-Al, Cu-Zn-Al, Ti-V and Ti-Nb alloy.

5. (original) The compliant apparatus of claim 1, wherein the compliant mechanism stores strain energy and utilizes the stored energy as a bias force for shape recovery.

6. (previously presented) The compliant apparatus of claim 1, further comprising at least one actuators.

7. (original) The compliant apparatus of claim 6, wherein the at least one actuators are made of Shape Memory Alloys (SMAs) and wherein the SMAs are based on shape memory effects including contraction, rotation, and a combination thereof.

8. (original) The compliant apparatus of claim 7, wherein the SMAs are configured for manipulating the compliant apparatus and the compliant mechanism.

9. (original) The compliant apparatus of claim 6, wherein the at least one actuators are characterized as piezoelectric or electro-active polymer actuators.

10. (original) The compliant apparatus of claim 6, wherein the at least one actuators are characterized as wires connected to an external apparatus and actuated remotely via the external apparatus.

11. (original) The compliant apparatus of claim 6, wherein the at least one actuators are characterized as Shape Memory Alloy wires or Shape Memory Alloy springs.

12. (original) A method of fabricating the compliant apparatus of claim 1, comprising:

forming the compliant mechanism and the tubular structure out of a tube with laser machining.

13. (previously presented) The method of claim 12, wherein

the laser machining has a laser beam size of about 50 μm or less.

14. (original) The compliant apparatus of claim 1, further comprising at least one built-in micro structure selected from the group consisting of a welding-enabling structure and a clamping-enabling structure.

15. (previously presented) A method of joining the compliant apparatus of claim 14 with at least one actuator, comprising the step of:

attaching the at least one actuator to the compliant apparatus via the at least one built-in micro structure.

16. (previously presented) The method of claim 15, wherein the at least one built-in micro structure is the welding-enabling structure, the method further comprising the step of:

welding the at least one actuator to the welding-enabling structure using a laser.

17. (previously presented) The method of claim 16, wherein

the laser has a laser beam size of about 200 μm or less.

18. (currently amended) An ultrasonic imaging system useful for intravascular ultrasound forward imaging applications, the ultrasonic imaging system comprising:

a compliant apparatus sized for intravascular use, having no mechanical joints and capable of being manipulated ~~in various motions and degree-of-freedoms~~ through at least one degree of freedom without permanent deformation, the compliant apparatus comprising:

a tubular structure having an axis and formed from a tube made of a material having a reversible structural behavior; ~~and~~

at least one compliant mechanism integrally formed from the tube by removing material from the tube to facilitate bending motion;

~~an~~ a forward-looking ultrasound transducer coupled to the compliant apparatus; and

at least one force-generating actuators attached to and located with the compliant apparatus for manipulating the compliant apparatus ~~and~~ by bending the at least one compliant mechanism away from the axis.

19. (original) The ultrasonic imaging system of claim 18, wherein the reversible structural behavior is characterized as elastic or superelastic.

20. (original) The ultrasonic imaging system of claim 18, wherein the material is selected from the group consisting of an elastic alloy including stainless steel and titanium alloy, and a superelastic alloy including nitinol, Cu-Al-Ni, Cu-Al, Cu-Zn-Al, Ti-V and Ti-Nb alloy.

21. (original) The ultrasonic imaging system of claim 18, wherein the at least one actuators are made of Shape Memory Alloys (SMAs) and wherein the SMAs are based on shape memory effects including contraction, rotation, and a combination thereof to maximize output displacement of the at least one compliant mechanism.

22. (original) The ultrasonic imaging system of claim 18, wherein the at least one actuators are characterized as piezoelectric or electro-active polymer actuators.

23. (original) The ultrasonic imaging system of claim 18, wherein the at least one actuators are characterized as wires connected to an external apparatus and actuated remotely via the external apparatus.

24. (original) The ultrasonic imaging system of claim 18, further comprising:

two additional actuators configured to actuate the compliant apparatus in an orthogonal direction, enabling the compliant apparatus to provide the ultrasound transducer with full three dimensional scanning motions.

25. (original) The ultrasonic imaging system of claim 24, wherein the at least one actuators and the two additional actuators are characterized as SMA wires or SMA springs.

26. (original) A micromanipulator ~~useful for intravascular applications including imaging and therapy, the micromanipulator~~ comprising:

a tubular elastic or superelastic element having an axis, having no mechanical joints, and formed from a tube made of a material having a reversible structural behavior by removing

material from the tubular element to facilitate bending motion; and

at least one force-generating actuators for manipulating the tubular elastic or superelastic element in bending motion away from the axis, the at least one force-generating actuators being attached to and located with said element.

27. (original) The micromanipulator of claim 26, wherein the at least one actuators are selected from the group consisting of Shape Memory Alloy (SMA) actuators, piezoelectric actuators, and electro-active polymer actuators.

28. (original) The micromanipulator of claim 27, wherein the at least one actuators are characterized as wires connected to an external apparatus and actuated remotely via the external apparatus.

29. (currently amended) ~~A~~ An intravascular system ~~for intravascular applications including imaging and therapy, the system~~ comprising:

a micromanipulator having no mechanical joints, ~~and characterized as~~ comprising a tubular structure having an axis and being made of an elastic or superelastic material; and

a plurality of compliant mechanisms spaced apart along the tubular structure, wherein each such mechanism is integrally formed from the tubular structure by removing material from the

tubular structure to allow flexure of the mechanism ~~forming an integral part of the micromanipulator~~; and

at least one force-generating actuators coupled to and located with at least one of the plurality of compliant mechanisms for effecting bending motions of the micromanipulator away from the axis.

30. (original) The system of claim 29, wherein the at least one actuators are selected from the group consisting of Shape Memory Alloy (SMA) actuators, piezoelectric actuators, and electro-active polymer actuators.

31. (original) The system of claim 29, wherein the at least one actuators are characterized as wires connected to an external apparatus and actuated remotely via the external apparatus.

32. (original) The system of claim 29, further comprising:

two additional actuators configured to actuate the compliant apparatus in an orthogonal direction, enabling the micromanipulator with full three dimensional steering motions.

33. (original) The system of claim 29, wherein the at least one actuators and the two additional actuators are characterized as SMA wires or SMA springs.

34. (original) The system of claim 29, wherein

each compliant mechanism is individually controllable via the at least one actuators.

35. (original) The system of claim 29, wherein

the at least one actuators are controlled by a remote electronic circuitry via a user interface.

36. (original) The system of claim 29, wherein

the micromanipulator and the plurality of compliant mechanisms are assembled together subsequent to being respectively formed.

37. (original) The system of claim 29, further comprising:

an ultrasound transducer coupled to the micromanipulator.

38. (original) The system of claim 29, further comprising:

a cooling system coupled to the micromanipulator for regulating temperature thereof.

39. (currently amended) The system of claim 38, wherein

the cooling system comprises a ~~pumping means~~ <u>pump</u> and biocompatible cooling fluid; and wherein

the ~~pumping means~~ <u>pump</u> provides a constant flow of the cooling fluid to the micromanipulator to prevent the at least one actuators from overheating.

40. (new) The apparatus of claim 1, further comprising at least one therapeutic interventional device, wherein said device is selected from the group consisting of a laser, a rotor blade device, a guidewire, a radio frequency device, a microwave device, a therapeutic ultrasound device, and a chemical delivery device.

41. (new) The system of claim 18, further comprising at least one therapeutic interventional device, wherein said device is selected from the group consisting of a laser, a rotor blade device, a radio frequency device, a guidewire, a microwave device, a therapeutic ultrasound device, and a chemical delivery device.

42. (new) The apparatus of claim 1, wherein said compliant mechanism exhibits a peak strain of less than 4%.

43. (new) The apparatus of claim 1, wherein said compliant mechanism comprises a double helix configuration.

44. (new) The apparatus of claim 1, wherein said compliant mechanism is formed by a process that produces a feature size of less than 200 μm.

45. (new) The system of claim 18, wherein said compliant mechanism exhibits a peak strain of less than 4 %.

46. (new) The system of claim 18, wherein said compliant mechanism comprises a double helix configuration.

47. (new) The system of claim 18, wherein said compliant mechanism is formed by a process that produces a feature size of less than 200 μm.

48. (new) The micromanipulator of claim 26, wherein the at least one actuators are located at least partially external to the tube.

49. (new) The system of claim 29, wherein the at least one actuators are located at least partially external to the tubular structure.